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NATURAL INCREASE IN THE BALTIC SOUTH AND SOUTH-WEST

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This article analyses the natural population increase (decrease) in the post-communist part of Baltic Europe (the federate state of Mecklenburg-Western Pomerania, West Pomeranian, Pomeranian, and Warmian-Masurian Voivodeships, Lithuania, Latvia, Estonia, the Kaliningrad and Leningrad region, and the federal city of Saint Petersburg) in 2002–2011. The study uses standard methods of demographic analysis, the data provided by national statistical services and Eurostat. All regions analysed are characterised by a low stationary phase of the demographic transition model (DTM). The situation proves to be unfavourable in the Polish regions under consideration and highly unfavourable in the remaining area.

Key words: Baltic Europe, natural increase/decrease

Introduction

Political transformations in Central and Eastern Europe [3; 4; 10; 56], economic transition [5; 8; 12; 42; 46; 49] and social changes [1; 7; 22; 48] had a considerable impact on the demographic [18; 28; 32; 35; 37; 38; 45] and health condition [35; 36; 41; 56] of the residing population. The system transformation process, following the disintegration of the communist system, can be divided into two stages.

- The first period covers the years 1990 to 2003 (from the establishment of the first non-communist government in this part of Europe to the accession of the first eight post-communist countries¹ to the European Union).

- The second period covers the years from 2003 to contemporary times.

The study analyses similarities in the rate of natural increase (RNI) in the second period of transformation. The analysis refers to the southern and south-east

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¹ Passing over the fact of Federal Republic of Germany absorbing the German Democratic Republic.

coast of the Baltic Sea, which used to be part of the socialist system. The division of the area into NUTS-2 in the case of European Union countries was considered best suitable for the study and similar size units were adopted for the Russian Federation. In effect 10 regions were identified (fig. 1):

- One region in Germany (Federation of Lands: Mecklenburg-Western Pomerania² (earlier — part of the German Democratic Republic).
- Three regions in Poland (Voivodships³: West Pomerania, Pomerania, Warmian-Masurian — this administrative division has been in force since the beginning of 1999.
- Three independent states, with the entire population embraced by the study (Lithuania, Latvia, Estonia — were in the past part of the Union of Soviet Socialist Republics (USSR).
- Three regions in the Russian Federation (two oblasts: Kaliningrad and Leningrad and one federal city Saint Petersburg⁴ — in the past — part of the USSR).

The study covers a period of 10 years: starting from 2002 (i.e. the last year before the accession of Poland, Lithuania, Latvia, Estonia to the European Union) to the year 2011 (the last year for which full statistical data were available).

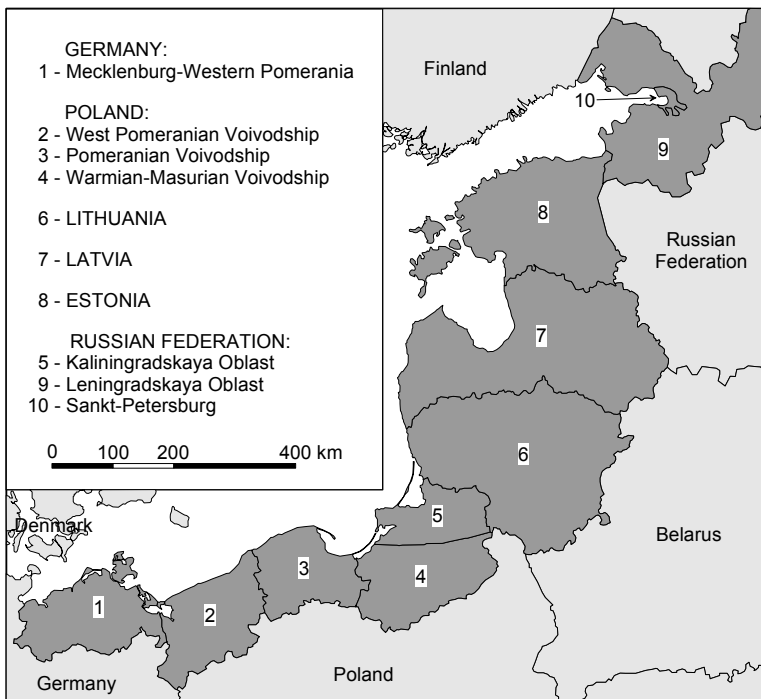


Fig. 1. Area under study

Source: Own study.

² We can also come across a German liaised name: *Mecklenburg-Vorpommern*.

³ This is a direct translation from the Polish language, we can also come across the term: *provinces*.

⁴ The names of cities may also read: *Saint Petersburg*, *Petersburg*, up to 1991 the official name was *Leningrad*.

The statistical data used in the study came from three websites [13—15].

The average population in the Baltic Europe post-communist countries covered by the study reads 21324 thousand⁵. The period 2002—2011 showed minor fluctuation⁶ with the greatest oscillation in Latvia (%RSD=3.51 %), and the smallest in Estonia (%RSD=0.48 %). Figure 2 presents these changes. We can see that a clear population drop was noted in the period 2002—2007 (from 21523 thousand to 21149 thousand) followed by a slight rising trend reaching its maximum in 2010 (a population of 21348 thousand). These changes can be accurately described by the equation: $y=0.011x^2-0.137x+21.667$ ($R^2=0.810$).

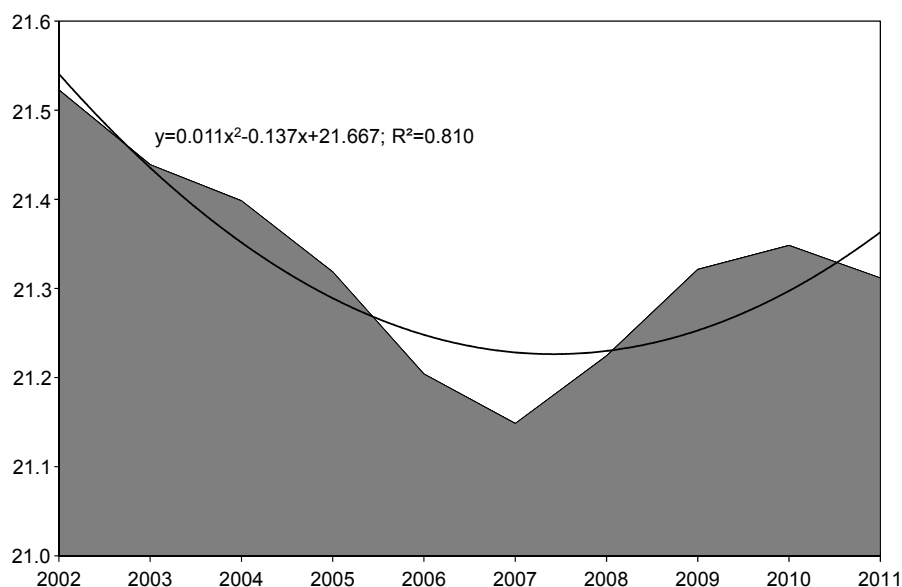


Fig. 2. Changes in population in the studied area in the years 2002—2011

Source: Own study based on dispersed data.

Changes in the rate of natural increase

The arithmetic average rate of natural increase in the years 2002—2011 fluctuates from 2.6% in the Pomeranian Voivodship to 10.2% in the Leningrad Oblast. As figure 3 shows, the average positive rate of natural increase is noted only in the Polish regions with a negative rate in the remaining area. This reflects the situation when viewed in terms of countries and not regions. Only in Poland (as a whole) the average rate of natural

⁵ This is the arithmetic mean of the years 2002—2011.

⁶ The relative standard deviation (%RSD) for the period was merely 0.53 %.

increase in the years 2002—2011 was positive, whereas Germany and the Russian Federation (and the states of the Baltic Assembly) experienced a natural decrease. In terms of stability the greatest fluctuation in natural increase rate appeared in Estonia and in the Russian regions.

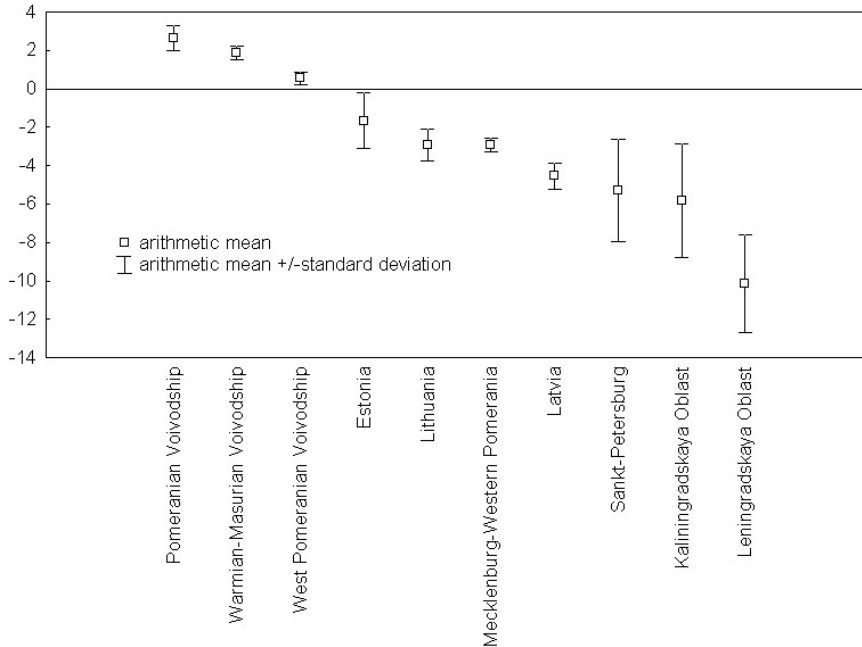


Fig. 3. Average natural increase [per 1000 persons] in the years 2002—2011

Source: Own study based on dispersed data.

By applying Hellwig's critical gap method [23] the analysed group of regions was divided into four groups varying in terms of the natural increase rate in the period 2002—2011. The results of the classification are given in fig. 4.

Looking at the map (fig. 4) no clear spatial regularities can be noted. Though in the areas dominated by Poles the natural increase rate was positive and in the areas inhabited by Russians the situation was the worst (three regions in the Russian Federation and Latvia inhabited by a numerous Russian diaspora), the latter should not be interpreted as the major cause of this state.

Additional information derives from the similarity analysis in natural increase changes in particular regions. The Mc Quitty's method [52] was applied to this aim. The breakdown to types is based on the Pearson product-moment correlation coefficient reading below 0.800. In effect four groups of regions were identified (including two single element groups), representing different types of changes (fig. 5). The results in spatial terms are given in fig. 6.

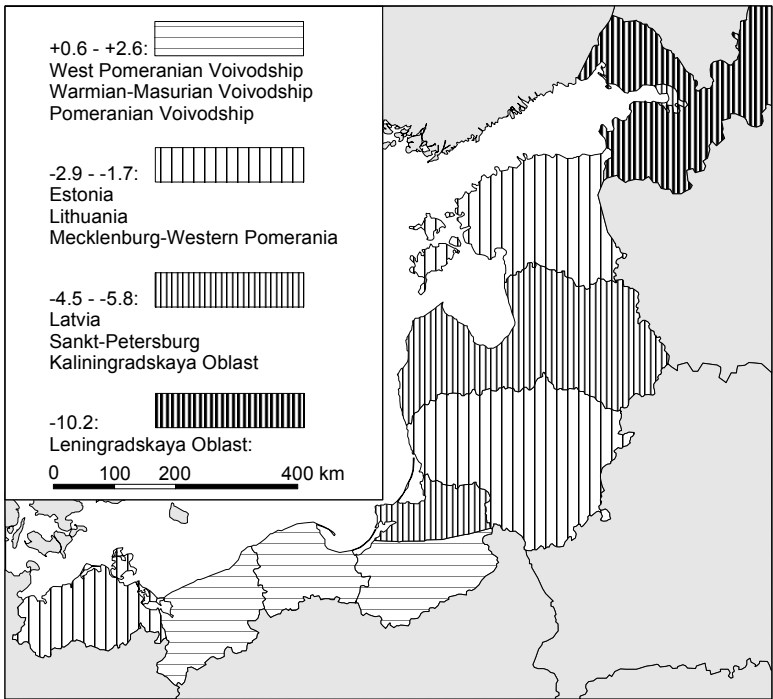


Fig. 4. Average natural increase [per 1000 persons] in the years 2002—2011 — spatial dimension

Source: Own study based on dispersed data.

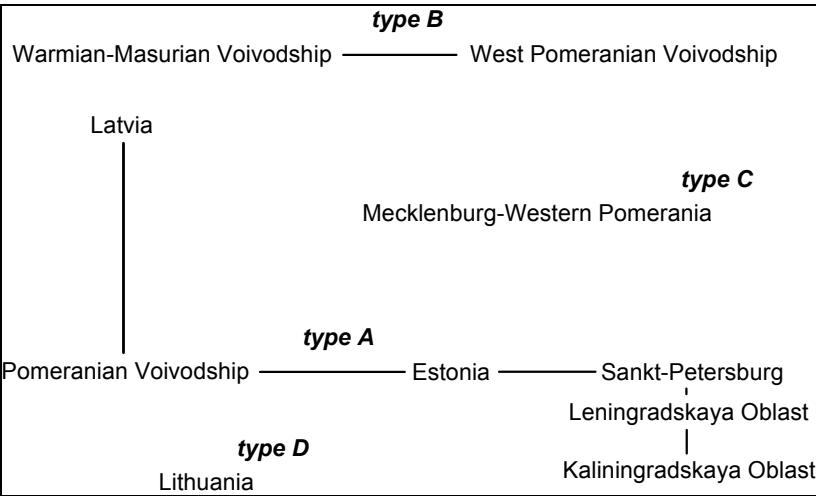


Fig. 5. Similarities in natural increase changes in the years 2002—2011.

Source: Own study based on dispersed data.

The next three figures present the population trends expressed by regression analysis, according to three types attributed to the studied regions. The regressions analysis was not calculated when the coefficient of determination fell below 0.800.

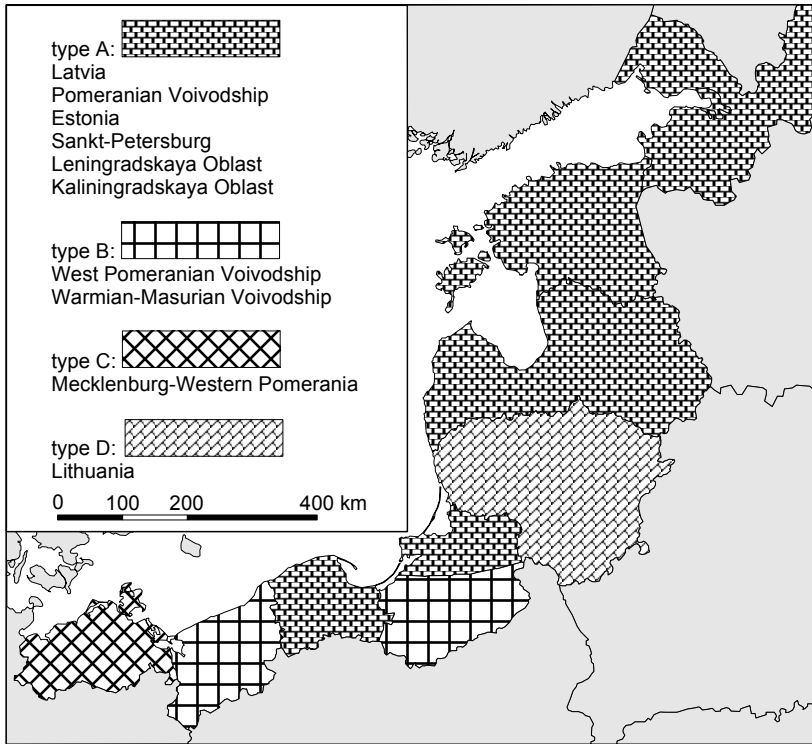


Fig. 6. Similarities in natural increase changes in the years 2002—2011 — spatial dimension

Source: Study based on fig. 5.

Regions classified as type A (fig. 7) featured slow gradual growth in natural increase. Looking at the variability of natural increase rates we can note that in the Pomeranian Voivodship and Latvia the increase was poor, sliding down in 2008 to a weak falling trend. In the case of three regions which are part of the Russian Federation, we can see a clear rising trend. The intermediate state between these two subgroups in the regions classified as type A is represented by Estonia showing a rising trend which is slowly dying out (in 2011 compared to 2010 we can even see the signs of a falling tendency).

Quite complicated changes in natural increase appeared in two Polish regions classified as type B (fig. 8). Initially both regions showed a drop in natural increase, which turned into a growing trend to again note a drop in 2008. Fluctuation of natural increase rate in both of these regions resemble the changes in the Pomeranian Voivodship, with the exception of the initial drop in natural increase.

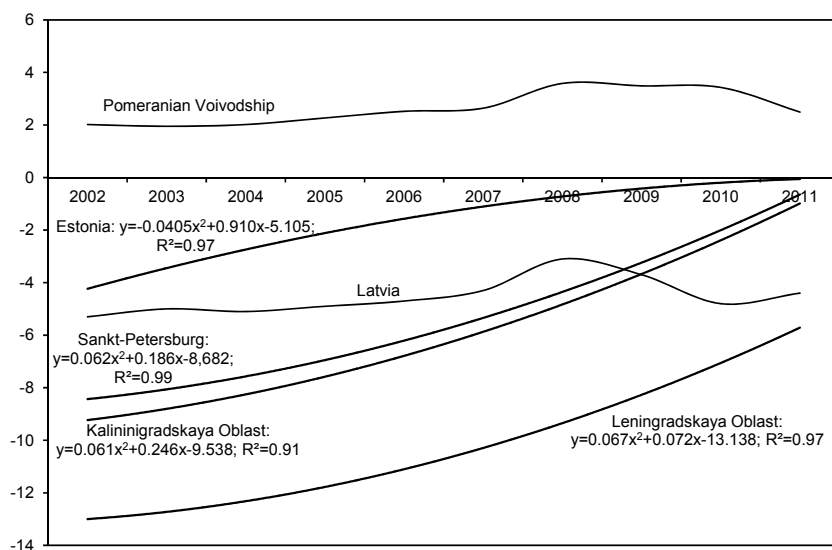


Fig. 7. Changes in natural increase [per 1000 persons] in regions classified as type A in the years 2002—2011

Source: Own study based on dispersed data.

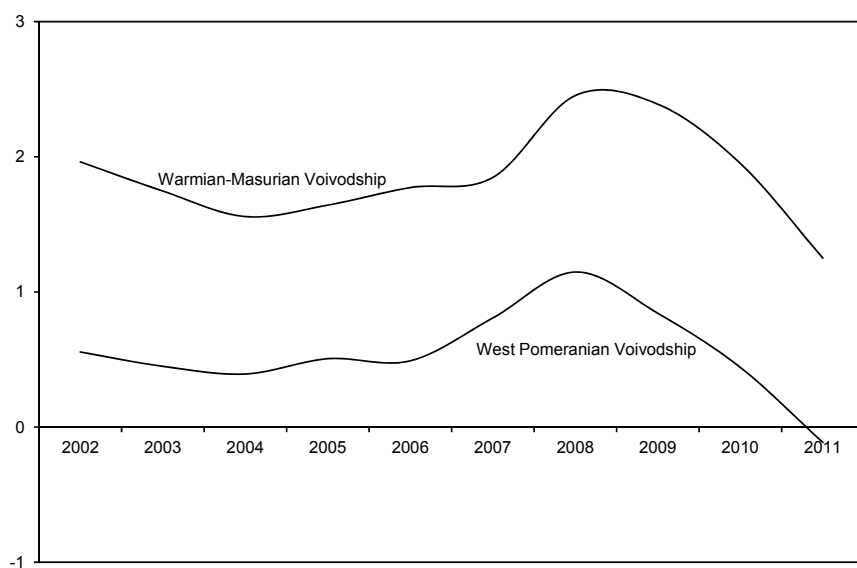


Fig. 8. Changes in natural increase [per 1000 persons] in regions classified as type B in the years 2002—2011

Source: Own study based on dispersed data.

Fig. 9 presents together the changes in Mecklenburg-Western Pomerania classified as type C and Lithuania classified as type D. The former did not experience serious changes in natural increase but in 2008 started to show a falling trend.

In Lithuania the natural increase change process seems to be the most complicated. The initial period did not note any changes in the natural increase rate but was followed by a drop that in 2007 showed strong growth, next followed by a decrease in the population rate.

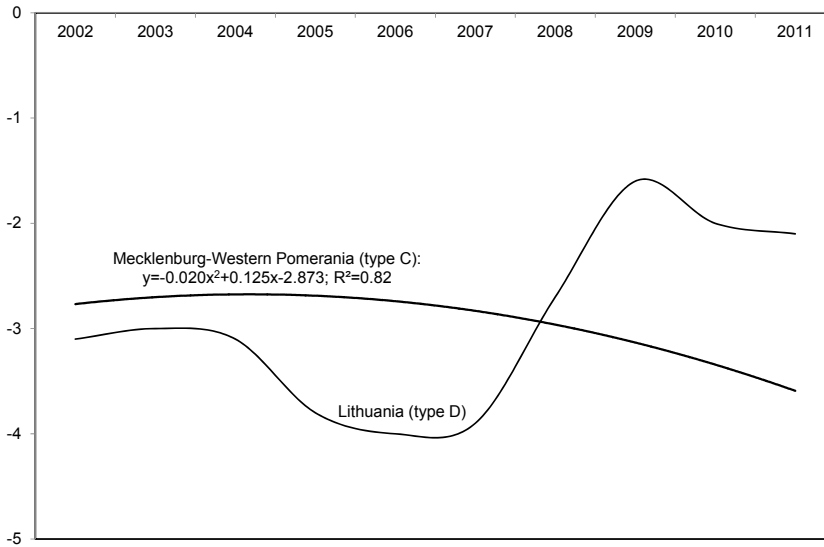


Fig. 9. Changes in natural increase [per 1000 persons] in regions classified as type C and D in the years 2002—2011

Source: Own study based on dispersed data.

Table 1 presents the results of an earlier study based on average natural increase rate (Hellwig's method [23]) and changes in natural increase (according to Mc Quitty's method [52]). Figure 10 shows the spatial aspect of the results.

Table 1

Synthetic assessment of natural increase rate in the years 2002—2011

Natural increase level	Types of changes in natural increase rate			
	A	B	C	D
Positive	Pomeranian Voivodship	West Pomeranian Voivodship, Warmian-Masurian Voivodship		
Negative	Estonia		Mecklenburg-Western Pomerania	Lithuania
Very negative	Latvia, Saint Petersburg, Kaliningrad Oblast			
Extreme negative	Leningrad Oblast			

Source: Own study based on dispersed data.

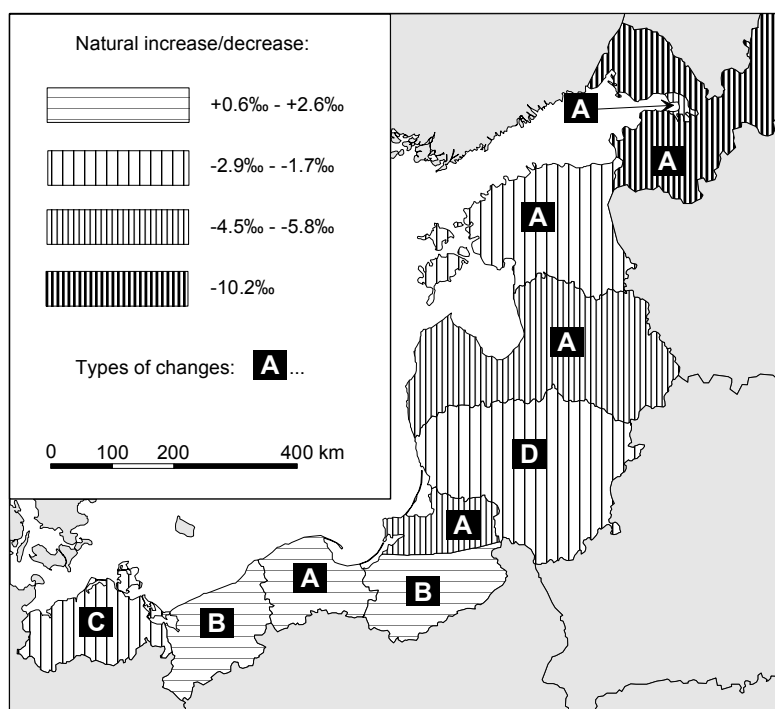


Fig. 10. Synthetic assessment of natural increase rate in the years 2002—2011

Source: Own study based on dispersed data.

Summary

Thus, we can see that the natural increase rate in most of the studied areas was not favourable. Though the transformation of the natural increase rate fits to the theory of second demographic transition [53; 55], the changes are much more detrimental in the entire area than the model indicated, with the exception of the Polish regions.

The reason underlying the situation may be related to the negative impact on the population of the system transformation costs [39]. The impact of these costs is twofold. The entire studied area shows a drop in the number of live births. This phenomenon is typical for all European post communist countries and results from changing traditions [11; 17; 45; 51]. Furthermore, the Russian part of the studied area experiences higher death rate resulting from the adopted life style and lower medical care standards [9; 43; 54; 58].

Conclusions arising from the study regarding the period following expansion of the European Union correspond to earlier research on the first period following the fall of the communist [2; 16; 24; 25; 27; 33; 34; 44]. An additional detrimental factor influencing the demographic situation in the majority of the studied areas was the negative migration rate which initially touched Mecklenburg-Western Pomerania (internal emigration in Germany)

and the Baltic Assembly States (emigration of Russian speaking population to Russia) [6; 19; 20; 21; 26; 29; 50]. But following European expansion in 2003 migration covered almost the entire area changing both the direction and cause of migrating. The migration dominating today is economy driven and targets at the countries of the “old” European Union [60]. However, the present economic crisis induces initiatives towards inhabiting the internal free flow of people in the European Union [30]. The direction of migration in the Russian part of the studied area differs from that of the other regions. This is because the south and south east regions of Baltic Europe, which belong to the European Union, are among its poorest parts. Whereas the south and south east parts of Russian Baltic Europe are among the richest in the Russian Federation.

The consequences of the negative demographic transformation, including the falling natural increase rate mean ominous changes in the demographic situation of the population inhabiting the analysed region, expressed by, among others, progressively aging society. Demographic forecasts project further population decrease in the majority of the regions. For example, the demographic forecasts for Estonia assume that in 2050 the population will read approx. 993.5 thousand⁷ [31]. An exception to this rule is the Pomeranian Voivodship with forecasts for the year 2035 of up to 2262.8 thousand compared to 2210.9 thousand in 2007, which means a growth rate of 102.4% compared to 2007 [47].

These adverse trends may in the near future inhibit economic development of the studied regions due to shortage of labour force on one hand and financial burdens of aging society on the other.

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⁷ This is variant 1 which assumes that the present demographic trends will not alter. The most optimistic variant (M) assumes the appearance of positive demographic trends with growing population to 1360.7 thousand in 2020 [31].

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